

- 19 -

Claims

1. A filter arrangement for use in a wireless communication transmitter, the arrangement comprising:

5 means for receiving digital signals to be transmitted;
DAC means for converting the digital signals to analog signals;
analogue channel filter means for filtering the
10 analog signals; and
digital pre-equaliser filter means coupled before the DAC means for filtering the digital signals, the digital pre-equaliser filter means being adapted to substantially correct for non-ideality in the
15 analogue channel filter means.

2. The filter arrangement of claim 1 wherein the pre-equaliser digital filter means comprises:

means for substantially correcting for non-linear phase
20 response in the analogue channel filter means; and
means for substantially correcting for amplitude error response in the analogue channel filter means.

3. The filter arrangement of claim 1 or 2 wherein the
25 pre-equaliser digital filter means comprises a finite impulse response (FIR) filter.

4. The filter arrangement of claim 1, 2 or 3 wherein the analogue channel filter means comprises a narrow band
30 RF filter.

- 20 -

5. The filter arrangement of any preceding claim further comprising up-converter means coupled between the DAC converter means and the analogue channel filter means for providing upward frequency translation.

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6. The filter arrangement of any preceding claim wherein the digital pre-equaliser filter means is adapted to adjust to a desired value the centre frequency of the analogue channel filter means.

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7. The filter arrangement of any preceding claim wherein the digital pre-equaliser filter means is programmable.

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8. The filter arrangement of any preceding claim wherein the digital pre-equaliser filter means has complex coefficients to provide asymmetric equalisation.

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9. The filter arrangement of claim 8 wherein the largest of the filter coefficients are real.

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10. The filter arrangement of any preceding claim wherein the analogue channel filter means has roll-off in the pass-band of the desired signal to achieve a specified stop-band attenuation.

11. The filter arrangement of any preceding claim wherein the arrangement is adapted for use in a received signal path.

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- 21 -

12. The filter arrangement of any preceding claim wherein the wireless communication system is a UMTS wireless communication system.

5 13. The filter arrangement of any preceding claim wherein the arrangement is adapted for use in a TDD wireless communication system.

14. Node B equipment comprising the filter arrangement
10 of any preceding claim.

15. A method for filtering in a wireless communication transmitter, the method comprising:

receiving digital signals to be transmitted;
15 providing DAC means converting the digital signals to analog signals;
providing analogue channel filter means filtering the analog signals; and
providing digital pre-equaliser filter means coupled
20 before the DAC means to filter the digital signals, the digital pre-equaliser filter means substantially correcting for non-ideality in the analogue channel filter means.

25 16. The method of claim 15 wherein the pre-equaliser digital filter means:

substantially corrects for non-linear phase response in the analogue channel filter means; and
substantially corrects for amplitude error response
30 in the analogue channel filter means.

- 22 -

17. The method of claim 15 or 16 wherein the pre-equaliser digital filter means comprises a finite impulse response (FIR) filter.

5 18. The method of claim 15, 16 or 17 wherein the analogue channel filter means comprises a narrow band RF filter.

10 19. The method of any one of claims 15-18 further comprising providing up-converter means coupled between the DAC converter means and the analogue channel filter means to provide upward frequency translation.

15 20. The method of any one of claims 15-19 wherein the digital pre-equaliser filter means adjusts to a desired value the centre frequency of the analogue channel filter means.

20 21. The method of any one of claims 15-20 wherein the digital pre-equaliser filter means is programmable.

22. The method of any one of claims 15-21 wherein the digital pre-equaliser filter means has complex coefficients to provide asymmetric equalisation.

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23. The method of claim 22 wherein the largest of the filter coefficients are real.

30 24. The method of any one of claims 15-23 wherein the analogue channel filter means has roll-off in the pass-

- 23 -

band of the desired signal to achieve a specified stop-band attenuation.

25. The method of any one of claims 15-24 further
5 comprising using the DAC means, the analogue channel
filter means and the digital pre-equaliser filter means
in a received signal path.

26. The method of any one of claims 15-25 wherein the
10 wireless communication system is a UMTS wireless
communication system.

27. The method of claim 26 wherein the method is
performed in Node B equipment in the UMTS wireless
15 communication system.

28. The method of any one of claims 15-27 wherein the
wireless communication system is a TDD wireless
communication system.

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29. The method of any one of claims 15-28 wherein the
step of providing the digital pre-equaliser filter means
includes:

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performing measurements of the analogue channel
filter means, and
automatically calculating on the basis of the
measurements coefficients of the digital pre-
equaliser filter means.

- 24 -

30. The method of any one of claims 15-28 wherein the step of providing the digital pre-equaliser filter means includes:

5 providing quantised filter coefficients of the digital pre-equaliser filter means based on the impulse response of the digital pre-equaliser filter means.